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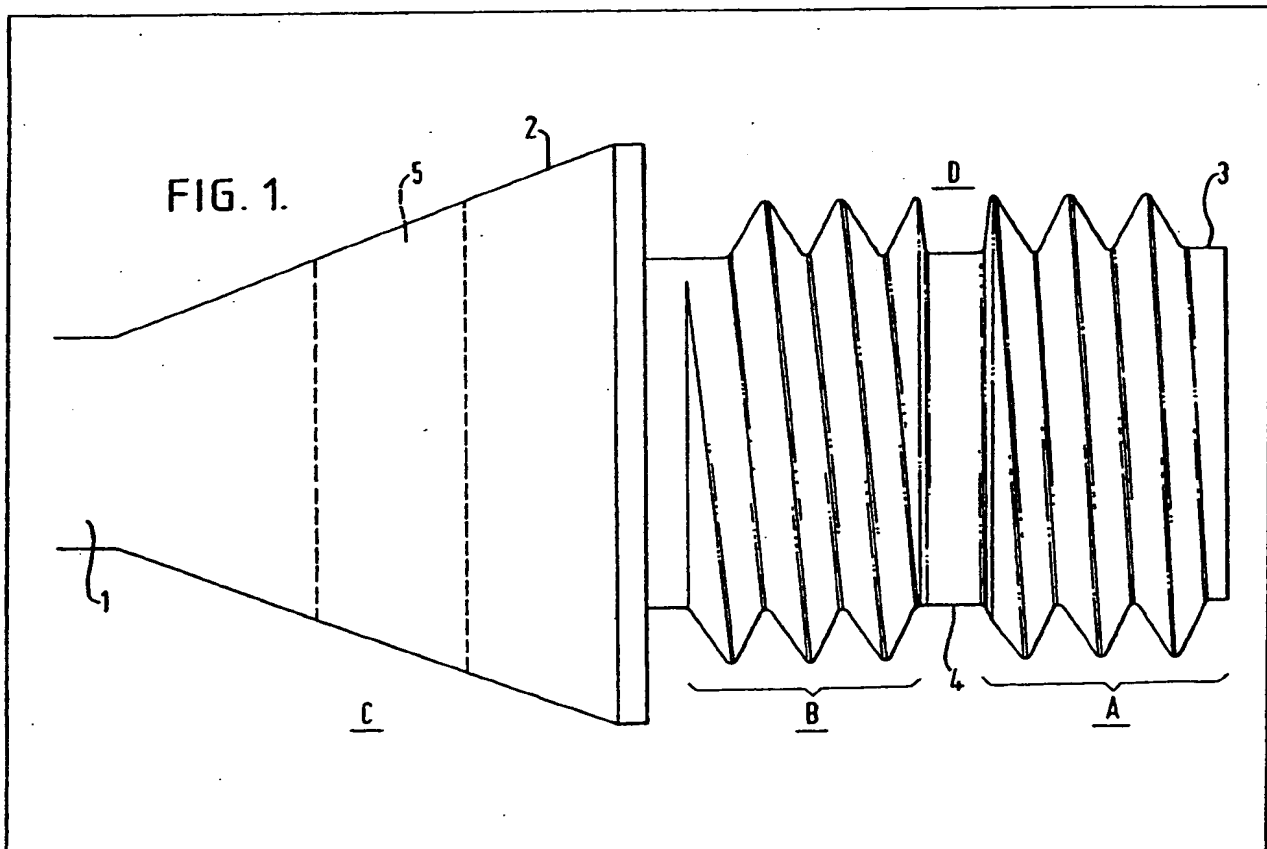
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 GB 2074279A
 GB 2014266A
 GB 1485624
 GB 1228242
 GB 766465
 GB 569581
 GB 548516
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(71) Applicants
 RM Automation Limited,
 Unit Z,
 The Maltings,
 Station Road,
 Sawbridgeworth,
 Hertfordshire CM21 9JX.
 (72) Inventors
 Raymond Cyril Morris
 (74) Agents
 J.B. King,
 Kings Patent Agency
 Limited,
 146a Queen Victoria
 Street,
 London EC4V 5AT.

(54) Screw-threaded fasteners

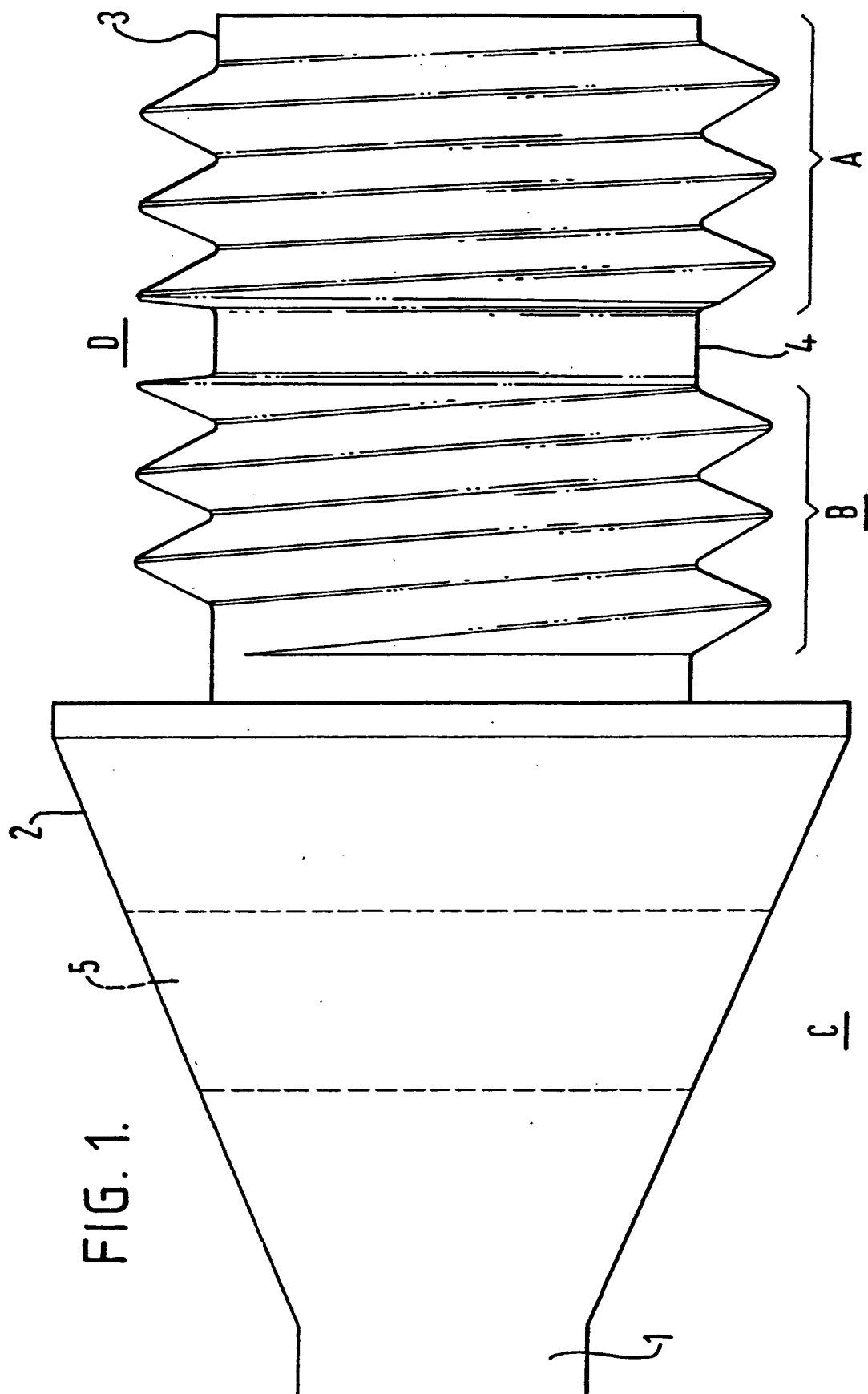
(57) A threaded connection primarily for a dart has a threaded spigot 3 provided with two thread portions A and B. The portion A is compatible with the threaded socket into which the spigot is screwed home but the portion B has an intentional error in pitch or dimension whereby friction produces a tight interference fit between the spigot and socket.

Transverse bore 5 can be engaged by the point of a second dart to act as a tommy-bar to tighten the screw.



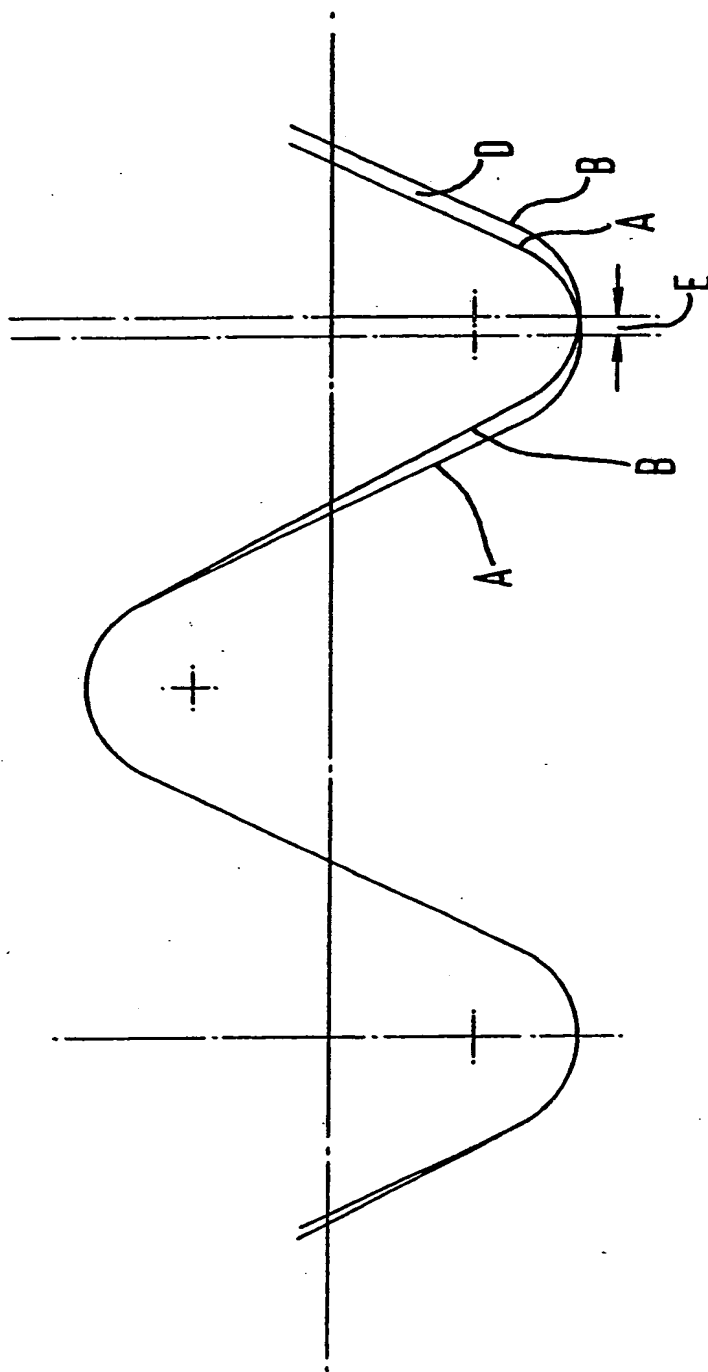
GB 2 086 516 A

1 / 2



2/2

FIG. 2.



SPECIFICATION

Improvements in screw couplings

- 5 This invention relates to an improved screw coupling and has for an object to provide a spigot and socket screwed connection whereby a locking action is produced to render the connection vibration and "shake-proof" in use so that the connection can not easily become unscrewed accidentally but which may nevertheless be undone and reassembled a number of times.

This invention also relates to a dart which embodies a screw connection as aforesaid provided between body parts such as the dart barrel and a shaft carrying the flights. With such screw connections, whilst they are convenient in enabling the parts to be replaced or interchanged in a simple manner by the user, they have the disadvantage that disconnection can occur accidentally in normal usage.

According to this invention there is provided a locking screw connection comprising a threaded spigot and a complementary threaded socket, the threading of the spigot being divided along the length thereof into two portions, the first portion being a threading compatible with the threading of the socket and the second portion having an introduced error in pitch or dimension whereby a progressively increasing force is required to screw home the second portion of the threading into the socket.

With this arrangement a first part of the threading provides easy entry of the spigot and sufficient support whilst the second part provides a high friction connection which avoids the coupling shaking loose or becoming accidentally loosened in use. The relative lengths of the two threaded portions of the spigot may be arranged according to requirements.

Preferably the error in the second portion of the threading is in pitch and advantageously about one thousandth of an inch interference is used for each pitch.

When used in a dart the spigot will preferably be provided on the shaft of the dart and engaging a threaded bore in the barrel. The spigot will be provided with a portion including a cross-bore and conveniently this is of a size enabling it to be engaged by the point of another dart of the set so that it may be readily tightened against the increasing force using the said point as a tommy-bar.

The arrangement thus provides a shaft which may be mated with the barrel without any risk of same becoming loosened during usage.

An embodiment of threading according to the invention and provided on an end of a dart shaft, also according to the invention, is shown in the accompanying drawings, wherein:-

Figure 1, shows the end of a dart shaft with the threading, and

Figure 2, shows the relationship between the first and second portions of the threading.

Referring to Figure 1 of the drawings, a dart shaft 1 is formed at its one end with a conically flared portion 2 which is integral with threaded spigot 3

adapted to engage the customary threaded bore provided in the barrel of the dart (not shown). The threaded portion 3 is divided into two parts comprising a first threading A which is compatible with the threading in the bore of the barrel, and a second threading B which has a deliberate error in the pitch whereby in order to screw same home into the threading of the barrel some force is required to overcome friction caused by the error. The two thread portions are separated by an annular groove 4.

The part 2 is provided with a through bore 5 and by arranging this to be of a size which will receive the diameter of the dart point a readily to hand tool can be used as a tommy-bar in order to securely tighten the threading into the bore.

As will be apparent, this arrangement obviates the use of shake-proof washers and similar devices which have hitherto been required to obtain a tight and secure fit. The nature and degree of the error in the threading portion B together with the relative lengths and proportions of the threadings can be adapted according to the particular needs and according to the material from which the relevant parts are constructed.

In Figure 2 the difference between the standard thread A of the first part and the thread B of the second part is shown. As can be seen there is an error E in the longitudinal displacements of the pitches and an interference D of 0.0009 inches in the pitch.

CLAIMS

1. A locking screw connection comprising a threaded spigot and a complementary threaded socket, the threading of the spigot being divided along the length thereof into two portions, the first portion being a threading compatible with the threading of the socket and the second portion having an introduced error in pitch or dimension whereby a progressively increasing force is required to screw home the second portion of the threading into the socket.
2. A screw connection in accordance with claim 1, wherein the first and second threading portions are separated by an annular groove.
3. A screw connection according to claim 1 or 2, wherein the two thread portions are substantially of equal lengths.
4. A screw connection according to any preceding claim, wherein the thread portions have a relative error in pitch of the order of one thousandth of an inch.
5. A dart having a body part and a flight carrying part and wherein the said parts are joined by a screw connection according to any preceding claim.
6. A dart in accordance with claim 6, wherein the flight carrying part has the threading and includes a through bore which is engagable by the point of a dart to facilitate tightening of the parts.
7. A screw connection substantially as described herein with reference to the drawings.

8. A dart as described herein with reference to the drawings.

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